

REMARKS

Claims 1-5, 8-12 and 14-18 are pending in this application. By this Amendment, claims 1, 8 and 14 are amended. No new matter is added. Claims 7, 13 and 19 are canceled without prejudice to, or disclaimer of, the subject matter recited in these claims. A Request for Continued Examination is attached. Reconsideration of the application is respectfully requested.

The Office Action rejects claims 13 and 19 under 35 U.S.C. §112, second paragraph. This rejection is moot because claims 13 and 19 are canceled by the Amendment. Claim 7 is also canceled.

The Office Action rejects claims 1, 3, 5, 7, 8, 10, 12-14, 16, 18 and 19 under 35 U.S.C. §103(a) over U.S. Patent No. 3,638,399 to Walker in view of U.S. Patent No. 5,466,645 to Hayden. The rejection of canceled claims 7, 13 and 19 is moot. The rejection of the remaining claims is respectfully traversed.

Claim 1 recites that an organic compound is adsorbed onto an activated carbon by mixing the activated carbon and the organic compound in a liquid state to bring the organic compound into contact with the activated carbon. Claim 1 also recites that the organic compound is desorbed from the activated carbon by heating the organic compound and the activated carbon at a temperature higher than the boiling point of the organic compound to selectively close most of pores of the activated carbon with a diameter less than 20 Å. Claims 8 and 14 recite similar features. These features are described in the specification at, for example, paragraphs [0035]-[0041].

In the process of adsorbing a liquid organic compound onto an activated carbon, as described in the Examples in the specification, the organic compound in a liquid state at ambient temperatures (naphthalene, such as coal tar and the like) and an activated carbon are mixed, and the mixture is charged into an enclosable oven for heating. Thereby, the organic

compound is evaporated into a gaseous state. As a result, pores of the activated carbon with a diameter less than 20Å are selectively closed. Because the organic compound is originally in a liquid state, the organic compound can exist more uniformly on a surface of the activated carbon or in the pores of the activated carbon.

Walker discloses a process for purifying acetylene-containing pyrolysis gases and regenerating activated carbon used in the purifying process (Abstract). A pyrolysis gas stream passes through a column packed with activated carbon to adsorb components of the pyrolysis gas onto the carbon (C1:L42-47). Walker discloses adsorbing the components of the pyrolysis gas solely for removing the components from the pyrolysis gas. However, Walker does not disclose, and would not have rendered obvious, that an organic compound in a liquid state is adsorbed and then desorbed at a temperature higher than a boiling point of the organic compound (*i.e.*, in a gaseous state), as recited in claims 1, 8 and 14.

Walker discloses that the activated carbon preferably has at least 50 percent of the pores with diameters greater than 25Å (C 2:L41-46). However, Walker fails to disclose, and would not have rendered obvious, the distribution of the pores that are closed with an organic compound after the components are adsorbed and desorbed.

Walker discloses that the activated carbon is reactivated by heating it with steam or inert flue gas at a temperature of 150°C to 500°C (C1:L72-75), or more substantially reactivated by heating the activated carbon to temperatures of 700°C to 1,100°C (C2:L10-15). However, Walker fails to disclose, and would not have rendered obvious, the distribution of the pores that are closed with an organic compound after the reactivation.

Furthermore, the Office Action concedes that Walker does not disclose closing the diameters of certain pores of the activated carbon because the Office Action does not specifically address where Walker discloses this feature. *See In re Angstadt et al.*, 190 USPQ 214 (CCPA 1976) (requiring that all positively recited features of a claim must be addressed

in an Office Action). Rather than addressing the recited feature, the Office Action merely asserts that "[n]o differences are seen in the carbon or the effect of the treatment" (Office Action, page 2). As explained in MPEP §706.02, a reference used under 35 U.S.C. §102 "must teach every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present." Since Walker does not explicitly disclose this feature, the rejection must be relying on a theory of inherency. However, MPEP §2112 states that the Patent Office must provide rationale or evidence tending to show inherency. Citing *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1990), MPEP §2112 states, "[i]nherency ... may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." Additionally, citing *Ex Parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990), §2112 states, "[i]n relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art" (emphasis in original). This standard is simply not met here. Thus, the Office Action's reliance on an explicit teaching fails and its reliance on any implicit teaching fails equally.

Based on the above, Walker does not disclose, and would not have rendered obvious, that the pores with a diameter less than 20Å are closed with the organic compound. Therefore, Walker does not disclose, and would not have rendered obvious, the features of claims 1, 8 and 14.

Hayden does not cure the above deficiencies of Walker. Therefore, claims 1, 8 and 14 are not disclosed, and would not have been rendered obvious, by Walker in view of Hayden. Claims 3, 5, 10, 12, 16 and 18 are also not disclosed, and would not have been rendered obvious, by Walker in view of Hayden at least for their respective dependencies on claims 1,

8 and 14, as well as the for the additional features these claims recite. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

The Office Action rejects claims 1-5, 8-12 and 14-18 under 35 U.S.C. §103(a) over *Control of Micropores of Molecular Sieving Carbon by Impregnation of Hydrocarbons and Heat Treatment* by Nakano et al. (Nakano) in view of Hayden. This rejection is respectfully traversed.

As discussed above, claim 1 recites that an organic compound is adsorbed onto an activated carbon by mixing the activated carbon and the organic compound in a liquid state to bring the organic compound into contact with the activated carbon, and that the organic compound is in a liquid state. Claim 1 also recites that the organic compound is desorbed from the activated carbon by heating the organic compound and the activated carbon at a temperature higher than the boiling point of the organic compound to selectively close most of pores of the activated carbon with a diameter less than 20Å. Claims 8 and 14 recite similar features.

As discussed in Nakano, pyrolysis gas is exposed to activated carbon at a temperature of 1223 K, and is at the same time adsorbed onto the activated carbon at the high temperature (Nakano, Table 1). The temperature of the pyrolysis gas exceeds the boiling point of naphthalene based on the temperature during the adsorbing being 1223 K, with the boiling point of naphthalene being 218°C (491.15 K). Therefore, at the temperature of 1223 K, the organic compound (comprising naphthalene, as recited in claims 1, 8 and 14) would not be in a liquid state. In addition, because the adsorption occurs in Nakano at the high temperature, naphthalene does not sufficiently enter the pores of the activated carbon.

Further, Nakano discloses the one step of contacting the pyrolysis gas at the high temperature of 1223 K with the activated carbon. However, Nakano does not disclose contacting the activated carbon with the organic compound in a liquid state and then heating

the activated carbon with the adsorbed pyrolysis gas organic compounds high than the boiling point.

Moreover, similar to the rejection over Walker and Hayden, the Office Action concedes that Nakano does not disclose closing the diameters of certain pores of the activated carbon because the Office Action does not specifically address where Nakano discloses this feature. As discussed above, rather than addressing the above-recited feature, the Office Action merely asserts that that it would have been obvious given the disclosure of the process in Nakano (Office Action, page 2). Thus, the Office Action's rejection relies on the above-recited feature being inherent in Nakano. However, for the same reasons asserted above, the Office Action has not established that the above-recited feature would necessarily flow from the process disclosed in Nakano. Accordingly, this reliance is improper.

Hayden does not cure the above deficiencies of Nakano for the same reasons discussed above regarding Walker. Therefore, based on the foregoing, claims 1, 8 and 14 are not disclosed, and would not have been rendered obvious, by Nakano in view of Hayden. Claims 2-5, 9-12 and 15-18 are also not disclosed, and would not have rendered obvious, by Walker in view of Hayden at least for their respective dependencies on claims 1, 8 and 14, as well as for the additional features the claims recite. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-5 and 7-19 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachment:

Request for Continued Examination

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